

**Remarks/Arguments:**

Applicant incorporates herein the response filed February 25, 2008 to the Office Action dated November 23, 2007.

Claims 1-7, 9, 10 and 12-14 are pending.

Claims 1-7, 9, 10 and 12-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (JP 62-81807) in view of Shibata et al. (U.S. 6,556,103). Applicant respectfully traverses this ground for rejection for the reasons set forth below.

Claim 1 includes features neither disclosed nor suggested by the cited art, namely:

...the first dielectric film and the second dielectric film have...a substantially same geometric shape...(Emphasis Added)

Claims 9 and 14 include similar recitations.

Suzuki discloses, in Figs. 1 and 2(e), a piezoelectric thin film resonator having an upper electrode 8 and a lower electrode 6. A dielectric film 5 is formed on lower electrode 6 and a dielectric film 9 is formed on an upper electrode 8 (Abstract). Suzuki does not disclose or suggest Applicant's claimed feature of "the first dielectric film and the second dielectric film have...a substantially same geometric shape" (emphasis added). Instead, as shown in Fig. 2(e) of Suzuki, dielectric films 5 and 9 have different shapes. Accordingly, Suzuki does not include all of the features of claim 1.

Shibata et al. disclose, in Figs. 3 and 4, a piezoelectric resonator that includes piezoelectric thin film 18, dielectric thin films 14 and electrode thin films 16 (col. 5, lines 48-56). Shibata et al. further disclose that SiO<sub>2</sub> is used to form dielectric thin films 14 and ZnO is used as piezoelectric thin film 18 (col. 5, lines 57-58 and col. 5, lines 61-62). Shibata et al. do not disclose or suggest Applicant's claimed features of "the first dielectric film and the second dielectric film have...a substantially same geometric shape" (emphasis added). These features are neither disclosed nor suggested by Shibata et al.

On page 3, lines 5-6 of the Office Action, the Examiner asserts that Figs. 24, 25, 30, 31 and 31-35 of Shibata et al. teach the upper and lower dielectric layers having a same geometric shape. Applicant respectfully disagrees. Instead, Shibata et al., in these figures, disclose a

substantially rectangular upper dielectric film 214 and a substantially square lower dielectric film 214. Thus, Shibata et al. do not disclose or suggest first and second dielectric films that have a substantially same thickness, a substantially same area and a substantially same geometric shape, as required by claim 1. In order to explain the differences between Shibata et al. and the subject invention, Applicant has enclosed an Exhibit including a marked-up copy of Fig. 24 and a copy of Fig. 25 of Shibata et al.

In the enclosed Fig. 24, an overhead view of piezoelectric resonator 210 is shown. According to common practice, solid lines represent lines seen from the overhead view whereas dotted lines represents lines drawn under some cover material that can not be seen from the overhead view. For example, in enclosed Fig. 24, ZnO piezoelectric film 218 covers the entire surface of lower dielectric film 214. Thus, lower dielectric film 214 can not been seen from the over head view. Lower electrode film 216 is formed on lower dielectric film 214 (shown in enclosed Fig. 25). Applicant notes that the exposed and covered portions of electrodes 216 are depicted by solid lines (i.e. exposed above piezoelectric film 218) and by dotted lines (i.e. covered by upper dielectric film 214). Applicant also notes that, in enclosed Fig. 24, there are two solid (i.e. dividing) lines that divide piezoelectric film 218 into three portions.

The dividing lines clearly illustrate the portion of upper dielectric film 214 that covers electrode layer 216. As shown in enclosed Fig. 25, there are no other materials formed above piezoelectric film 218, expect upper electrode layer 216 and upper dielectric film 214. Accordingly, the material between the dividing lines and seen from an overhead view is upper dielectric film 214. Therefore, the skilled person would understand that: 1) lower dielectric film 214 is formed under the entire surface of the ZnO piezoelectric film 218 and 2) upper dielectric film 214 is formed only between the dividing lines, as shown in enclosed Fig. 24. Thus, lower dielectric film 214 formed below piezoelectric film 218 is substantially square. In contrast, upper dielectric film 214 is substantially rectangular. Accordingly, the upper and lower dielectric films 214 have substantially different geometric shapes. The piezoelectric resonators shown in Figs. 30, 31 and 33-35 have similar configurations in which the upper and lower dielectric films have substantially different geometric shapes.

A counterargument may be made that the lower dielectric film 214 may be formed only between the two dividing lines, shown in enclosed Fig. 24. However, such a structure can not be made easily and economically. Shibata et al. describe the formation of piezoelectric vibrator 210, at Col. 12, line 65-Col. 13, line 20, but do not disclose or suggest that lower dielectric film

214 is formed in a same geometric shape as upper dielectric film 214. In order to fabricate lower dielectric film 214 in a same geometrical shape as upper dielectric film 214, there are difference problems that have to be solved. One problem is an alignment of the two dielectric films, and a second problem is an increase in a process cost. As known to the skilled person, a thin lower dielectric film is typically formed as a film that covers the entire surface of the substrate. Accordingly, in order to form the lower dielectric film into a specific shape, a further patterning process is necessary. The patterning process may induce other processes, such as an anti-pollution process. As a result, the process cost may increase significantly.

In the enclosed Fig. 24, the electrode layer 216 must be exposed outside of piezoelectric resonator 210 in order to contact other outer circuits. Thus, the upper dielectric film 214 should be patterned. However, there is no need to pattern lower dielectric film 214. Instead, such a patterning process would increase the process cost. Accordingly, based on Figs. 24, 25, 30, 31 and 33-35 of Shibata et al., the skilled person would understand that the lower and upper dielectric thin films 214 have different geometric shapes. Thus, Shibata et al. can not disclose or suggest that first and second dielectric films have substantially a same geometric shape, as required by claim 1. Accordingly Shibata et al. do not include all of the features of claim 1. Thus, allowance of claim 1 is respectfully requested.

Claims 2-7 include all of the features of claim 1 from which they depend. Accordingly, claims 2-7 are also patentable over the cited art.

Claims 9 and 14, although not identical to claim 1, includes features similar to claim 1 that are neither disclosed nor suggested by the cited art. Namely, that the first dielectric film and the second dielectric film have a substantially same geometric shape. Accordingly, allowance of claims 9 and 14 is respectfully requested for at least the same reasons as for claim 1.

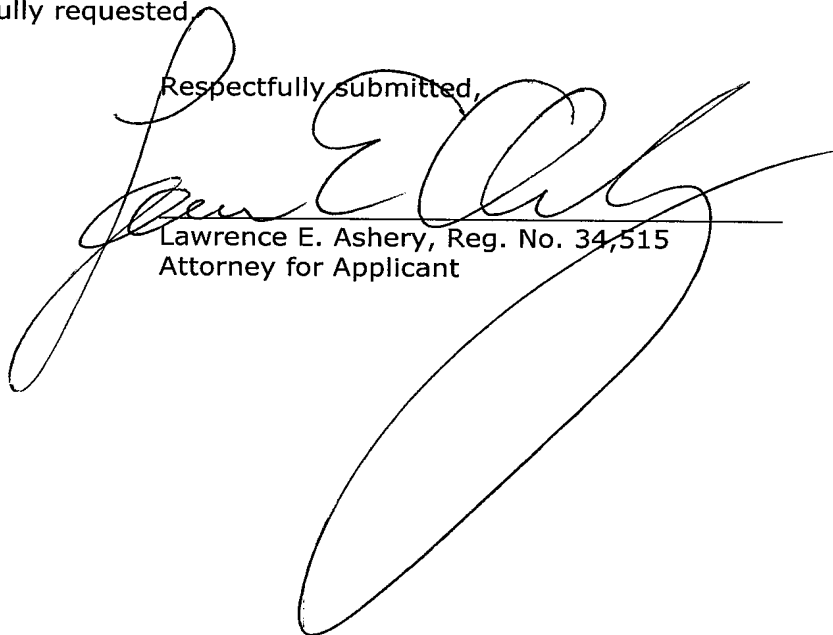
Claims 10, 12 and 13 include all of the features of claim 9 from which they depend. Accordingly, claims 10, 12 and 13 are also patentable over the cited art.

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In view of the arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

  
Lawrence E. Ashery, Reg. No. 34,515  
Attorney for Applicant

DMG/nm

Attachment: Exhibit

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P.O. Box 980  
Valley Forge, PA 19482  
(610) 407-0700

NM263165

